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THE UNIVERSITY OF ALBERTA

Comparison of Computerized and Standardized Version of the Multidimensional Aptitude Battery and the Wechsler Adult Intelligence Scale - Revised

by

Braden P. Hirsch

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF

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IN

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DEPARTMENT OF EDUCATIONAL PSCYHOLOGY

EDMONTON, ALBERTA

SPRING 1986

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "Comparison of Computerized and Standardized Version of the Multidimensional Aptitude Battery and the Wechsler Adult Intelligence Scale - Revised" submitted by Braden P. Hirsch in partial fulfillment of the requirements for the degree of Master of Education in (Counselling Psychology)

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Date: November 13 1985

Abstract

This study was designed so that results from the computer administration of a group intelligence test could be compared with the results of the usual pencil and paper administration of the same test. A total of 40 adult students at the Alberta Vocational Centre were administered the Verbal subtests (Information, Arithmetic, Vocabulary, Comprehension, Similarities) of the Multidimensional Aptitude Battery (MAB). An Apple IIE microcomputer was used to administer the MAB to 20 of the subjects while the other 20 were administered the MAB in the usual pencil and paper manner. Results were analyzed using a one-way analysis of variance comparing individual subtests and the Verbal IQ. Results indicated that there were no significant differences between test scores obtained through computer administration and test scores obtained through pencil and paper administration.

All subjects in this study were also administered the following Verbal subtests of the WAIS-R: Information, Arithmetic, Vocabulary, Comprehension, Similarities. A correlation matrix was developed comparing MAB computer subtests and IQ score, with the corresponding WAIS-R subtests and IQ score. This was also done for the MAB pencil and paper group's subtests and IQ score, and the

corresponding WAIS-R subtests and IQ score. In the MAB written and WAIS-R correlation matrix, the Vocabulary subtests correlated at .81, and the Verbal IQ scores correlated at .83. In the MAB computer and WAIS-R correlation matrix, the Vocabulary subtests correlated at .85 while the Verbal IQs correlated at .86. The correlations in the MAB computer and WAIS-R matrix were slightly higher than the corresponding correlations were in the MAB written and WAIS-R matrix. There was no significant difference between these correlations.

It was found that:

(1) The Verbal subtest of the MAB can be successfully computerized.

(2) There was no significant difference between the means of the computer, and pencil and paper groups.

(3) There was no significant difference in predictive validity (to WAIS-R) of computerized or pencil and paper versions of the MAB.

(4) While predictions of individual WAIS-R subtest scores should be done with caution, the Verbal IQ determined by the MAB is quite comparable to that of the WAIS-R.

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Chapter I

Introduction

Introduction to the Problem

The Wechsler Adult Intelligence Scale - Revised (WAIS-R) is a widely used test of intelligence for adults. It is intended for use with individuals aged 16 years and older. Sixty to 90 minutes of time by a trained examiner is usually required to administer the 11 different subtests of the WAIS-R to one individual. Thus, the WAIS-R is not used as routinely as it might be as it is a costly procedure in terms of the time required by a trained professional.

The results of the WAIS-R are often used to help individuals make decisions about their educational and vocational plans. At the Alberta Vocational Centre (AVC) in Edmonton, the WAIS-R is sometimes used in conjunction with other tests to help individuals of all intellectual levels decide upon their vocational plans, however not all prospective students are tested. If information about intellectual ability, as revealed by intelligence testing, was available to all applicants, it is possible that some individuals might reassess their goals and educational plans. Individuals who place in the educable mentally

handicapped range (60 - 80 IQ) are encouraged to take a program which stresses learning through training-on-the-job as opposed to academic programming. In fact, government sponsorship for this particular program (Transitional/Vocational) is contingent upon a WAIS-R score falling in the 60 - 80 range.

The Multidimensional Aptitude Battery (MAB) was released in 1984. It was designed to provide a convenient objectively-scorable measure of general aptitude or intelligence. The structure of the MAB is almost the same as that of the WAIS-R in that it has five verbal and five performance subtests, and these yield Verbal, Performance, and Full Scale I.Q. scores. The author of the MAB, Douglas N. Jackson, states that a serious drawback of the WAIS-R is that it must be administered individually by a trained professional. The MAB was designed so that it can be administered through economical group procedures and the scores obtained are equal or similar to those obtained on the WAIS-R. The MAB appears to be a much more cost efficient test.

The MAB was designed to measure the same abilities or aptitudes as the WAIS-R. The amount of time required to administer the MAB is one hour and 40 minutes. The MAB Manual suggests that one examiner can administer the test to 25 respondents at one time. As well, the examiner does

not require as much training as does the examiner who administers the WAIS-R. The MAB can be administered to a group of people much more economically. If scores obtained on the MAB do not differ significantly from those obtained on the WAIS-R, the test will be useful in helping students at the Alberta Vocational Centre make realistic educational plans.

In 1984, Calder & Varnhagen developed a program to administer and score group tests on microcomputers. If a microcomputer can be used to administer the MAB it will be economically advantageous. Obviously a testing clerk will not be required. Also, subjects could be tested individually with little expense. A limitation of the Calder/Varnhagen program is that questions that include graphics cannot be administered. In this study, the subtests in the Verbal battery of the MAB were administered on a microcomputer. These tests were judged suitable for microcomputer administration. To demonstrate the affect of the computer in test administration, the subtests in the Verbal battery of the MAB were also administered in the usual pencil and paper fashion as described in the MAB Manual. In the MAB Manual Jackson states that the Wechsler scales have become the standard upon which new tests of intelligence are appraised. Scores obtained on the two different administrations of

the MAB were compared with scores obtained on the Verbal subtests of the WAIS-R.

Statement of the Problem

This study was designed to see whether computerization of a group test affects performance. Specifically, the following questions were asked:

1. Is it possible to administer the MAB test using the Microcomputer Diagnostic Testing Project which was developed by Calder/Varnhagen?

2. Do subjects taking the MAB test on computer receive different scores than subjects taking MAB in the usual pencil and paper manner?

3. What is the relationship of the different presentations of the MAB to the WAIS-R scores?

4. Is there any significant difference between the relationships?

Limitations

The Alberta Vocational Centre is described as a school for the socially, economically, and educationally disadvantaged adult. Since students from this school were the subjects involved in this study, care should be taken in generalizing the results to the overall adult population.

Chapter II

Summary of the Research

Wechsler Adult Intelligence Scale-Revised

The Wechsler Adult Intelligence Scale - Revised (WAIS-R) is an intelligence test which should only be administered by individuals thoroughly trained in its use. Rigorous standardized procedures as described in the WAIS-R Manual are to be adhered to during administration. Wechsler has defined intelligence tests as "...sets of standardized questions and tasks for assessing an individual's potential for purposeful and useful behavior" (p.7). The WAIS-R can be administered to individuals 16 years and older. To administer the eleven subtests of the WAIS-R, 60 to 90 minutes of time is usually required. It is recommended that the entire test be administered in a single session.

The WAIS-R (1981) is a revision of the original Wechsler Adult Intelligence Scale (WAIS) which was published in 1955. The WAIS was a descendant of Form 1 of the Wechsler Bellevue Intelligence Scale of 1939. The WAIS-R Manual reports that the same 3 basic factors are measured by the WAIS-R as were measured by the WAIS.

These include a verbal comprehension factor, a perceptual organization factor, and a memory factor.

Guertin (1959) reports that the WAIS "...will serve as a criterion of validity for nearly all newly proposed measures of intelligence" (p.551). Jackson (1984) also pays tribute to the WAIS-R: "...a new adult measure of general intellectual ability could hardly be expected to be acceptable if its correlation with the WAIS-R was low" (p.5).

The WAIS-R is the most widely used instrument for assessing the intellect of an adult. Entrance into various government sponsored educational/vocational programs is often dependant upon a WAIS-R score falling within a particular range. Currently, there is no other instrument that reveals a profile of aptitudes and abilities for adults like that of the WAIS-R. The major drawback of the WAIS-R is that it must be individually administered by a trained professional. It would be used much more widely if it was not so costly in terms of the amount of time required by a trained professional.

Multidimensional Aptitude Battery

The Multidimensional Aptitude Battery (MAB) was published in 1984. The MAB was designed to provide an "...objectively scorable measure of general aptitude or

intelligence in the form of a profile containing five verbal and five performance subtest scores" (p.5). The MAB yields a Verbal, Performance, and Full Scale IQ and can be administered in approximately one hour and 40 minutes. Groups of up to 25 can be administered the MAB by a single tester and the questions are multiple choice. The author, Jackson, claims that the MAB measures the same abilities as does the WAIS-R even though the content, administration, and response formats differ. The design of the MAB is very similar to that of the WAIS-R except that it is administered through group procedures.

The MAB was equated to the WAIS-R by using a heterogeneous sample of 160 respondents. "Equating occurred in two stages--first, at the subscale level and second, at the summary scale level, separately for the Verbal Scale, Performance Scale, and Full Scale" (p.30). To evaluate these WAIS-R equated MAB norms, probability sampling of high schools was employed and 5000 students were tested. The average IQ for these students was 103 using the WAIS-R equated MAB norms. This IQ score, which is slightly above average, is probable considering that those of lower intelligence usually drop out prior to reaching high school.

No studies were found in the literature equating the MAB to the WAIS-R. Jackson reports a study of 145

individuals in the MAB Manual in which correlations with the WAIS-R were .94, .79, and .91 for the Verbal, Performance, and Full Scale IQ's respectively. He also reports correlations of .82, .82, and .87 for the Verbal, Performance, and Full Scale IQs of the WAIS and WAIS-R. Jackson concludes that "...assuming a group test is appropriate for the respondent, the MAB is as reasonable an alternative to the WAIS-R as is the WAIS-R an alternative to the WAIS" (p.48).

The MAB is a highly promising test. If individual subtests and IQ scores correlate highly with those of the WAIS-R, it could be used routinely as it is not a costly procedure in terms of the time required by a professional. The structure (multiple choice) makes its scoring more objective than the WAIS-R, and it also allows for administration by a computer.

Computer Assisted Testing

In recent years, a number of articles have been published about computer assisted testing. Issues have been identified and must be considered before psychologists should administer standardized tests on computers.

Sampson (1983) identified potential problems of computer assisted testing and assessment: 1. Inadequate

provision for human factors. Individuals may misunderstand the instructions or may have difficulty in reading and understanding the items. Pressing the wrong key on the keyboard will result in an error. These types of errors could affect the validity of the test results. 2. Inadequate client screening. The computer will not detect an individual who is in crisis and unable to respond to questions at the current test session. 3. Confidentiality of records. Computers make unauthorized access to test results much more possible. 4. Inaccurate generalized test interpretations. Computer interpretations of test results can be too general and possibly misleading. 5. Inappropriate norms for computer administered tests. Most tests currently administered on computer were developed and normed with test results that were obtained from the usual pencil and paper administration. Differences in the mode of administration may make the norms for pencil and paper tests inappropriate for computer administered tests. 6. Staff resistance to computer systems. Professionals, in general, have resisted the use of computers in assessment even though their clients have responded favorably.

Positive benefits of computer assisted testing cited by Sampson were: (a) Better client response to the testing situation. Computers have been criticized for

having a dehumanizing effect on clients. Studies have shown that this is not the case. Subjects find the computer appealing, especially for sensitive interview topics. (b) Cost effectiveness. Computers have the potential to be much more cost effective than traditional testing methods. As we become more familiar with computer assisted testing, it will become even more cost effective. (c) The ability of the computer to do interactive testing. Computers have the potential to limit test administration to items that are appropriate to the individual being tested. Items that are too difficult or too simple, can be skipped. (d) The generation of ancillary test data. The computer is capable of recording data on how items are completed. This type of information can give clues as to how the data should be interpreted, whether re-testing should take place, etc. (e) More efficient use of staff time. The computer can handle many of the clerical tasks, thus making more time available for more complex duties. (f) More efficient and accurate scoring. Computers require less time to score tests, and they are also more accurate. Scoring time is reduced, thus allowing for immediate test interpretation. (g) Reduced error rates in scoring and administration. Computers score tests more accurately than do examiners. Also, examinees can not make the error of marking the answers in the wrong spot on

the answer sheet. (h) Validity of interpretation of results. Computer interpreted reports are as valid and reliable as clinical judgements. (i) Potential assistance to persons with visual and/or auditory handicaps. Specialized attachments to computers can allow individuals with auditory, visual, and physical handicaps to be tested with minimal staff assistance.

Brown (1984) cites the same advantages and disadvantages to computer assisted testing as does Sampson (1983). Brown agrees that normative data should be created for computer administered tests rather than using the norms of tests that were developed from data gathered through pencil and paper administrations.

Several other studies such as Ward (1984), Brzezinski (1984), Hambleton et. al. (1983), Brantley (1984), Collins (1984), cite the same advantages to computer assisted testing as do Sampson (1983) and Brown (1984). Sampson and Brown clearly state the need for renorming if standardized tests are to be administered on a computer.

Psyc-Systems (1984) of Baltimore, Maryland, market a number of standardized tests for use on a microcomputer. These include such tests as the Minnesota Multiphasic Personality Inventory (MMPI), Career Assessment Systems, Medical History Survey, California Psychological Inventory, Rorshach, Self Directed Search, etc. More

tests are currently being put on computers by this company. The norms being used for these instruments are the norms which were developed by their authors in their pencil and paper formats.

The potential benefits of computer assisted testing certainly calls for more research into the results obtained from this type of testing. Standardized tests which have been normed with data obtained from pencil and paper adminstrations should not be used on microcomputers until studies prove that it is appropriate and valid. No studies were reported in the literature that compared test results obtained by computer administration of the MAB with pencil and paper administration of the MAB.

The microcomputer certainly has the potential to be a useful assistant to the practicing psychologist. The potential problems can be worked out or overcome. Studies comparing standardized test results of computer administration with pencil and paper administration will have to be conducted to see whether renorming is warranted. Test results for clients can be stored on floppy disks which can be kept under lock and key, thus ensuring confidentiality of records. Resistance to computer use will decrease as more and more become available, and the benefits become more evident.

Microcomputer Diagnostic Testing Project

The Microcomputer Diagnostic Testing Project (MDTP) was developed by Calder & Varnhagen in 1984 and was designed to score and administer multiple choice questions on an Apple II microcomputer. The program was designed to be user friendly, that is, previous computer experience is not essential in working with the program. In all, the program and Manual for the MDTP are reasonably self-explanatory.

The MDTP has many good features. The teacher can determine the order in which the student takes the tests or he can allow the student the choice. In reviewing test results, the teacher can review the total scores for all students on a particular test or he can review the answers given by a student for each question on a particular test.

A drawback of the program is that approximately one minute (depending on length of test) is required by the microcomputer to format the test questions after the "Take Test" option has been selected. The authors informed that the program is written in Basic language and that this delay could not be avoided. This time period can be used to give students instructions or answer questions, and this brief delay does not seem to pose a major problem.

Chapter III

Procedure

The purpose of this study was to examine the relationship between test scores obtained through computer administration with test scores obtained in the usual pencil and paper method. If test results obtained from computer administration do not differ significantly from test results obtained in the usual pencil and paper administration, it would be economical to test students on an individual basis with a microcomputer.

More specifically, the following questions will be addressed:

1. Can we computerize the Multidimensional Aptitude Battery (MAB) using the Microcomputer Diagnostic Testing Project (MDTP)?
2. Do subjects taking the MAB test on a computer receive different scores than those who take the test in the usual pencil and paper method?
3. What is the relationship of the different presentations (written or computer) of the MAB to the WAIS-R scores?
4. Is there any significant difference between the relationships?

Permission to conduct the study was obtained from AVC

Management. The writer of this paper, who is currently employed as an Educational Counsellor at AVC, was given permission to conduct this study. As well, students who agreed to take part in this study were asked to sign a "consent form" so that their test scores could be used for research purposes (See Appendix I).

The testing for this study was conducted between February and June, 1985. Forty individuals were asked to take part. All individuals who were on the caseload or who were scheduled to see the researcher regarding admission to programs were asked whether they would participate in this study. This was done until 40 participants were gathered. All who were approached to participate in the study agreed to do so. The researcher explained the purpose of the study and offered an interpretation of the test results.

All subjects in the study were administered the following Wechscler Adult Intelligence Scale - Revised (WAIS-R) Verbal subtests: Information, Similarities, Arithmetic, Comprehension, and Vocabulary. As well, all subjects were administered the Verbal subtests of the Multidimensional Aptitude Battery (MAB): Information, Similarities, Arithmetic, Comprehension, and Vocabulary. Twenty of the subjects were administered the MAB in the booklet format as described in the MAB Manual and 20 were

administered the MAB on a microcomputer. The method of MAB administration was determined by randomly assigning each of the individuals to either the written or computer group.

All subjects were either students or applicants at the Alberta Vocational Centre. There were 24 male and 16 female subjects ranging in age from 17 to 50. Reading levels varied from Grade 5 to 12. The sample selected for this study should be representative of the general student population at AVC as the counsellor involved in this study deals with students from all program areas. As well, all students who saw this counsellor were asked to participate in the study, regardless of the program in which they were registered, or for which they were applying.

In order to answer the questions cited above, the following steps were taken:

1. The Verbal subtests of the MAB were entered on computer using the MDTP. This would allow for administration of this test by microcomputer.

2. T scores for all the subtests administered and IQ scores were calculated for the WAIS-R and MAB. The mean Verbal IQ score was tabulated for the WAIS-R, MAB computer, and MAB pencil and paper groups. Mean T scores were also tabulated for the Verbal MAB subtests for both the computer administered group and the pencil and paper

administered group as well as for the WAIS-R subtests. A reading level was obtained for each student using transcripts or English grade placement at Alberta Vocational Centre.

3. Scores for subjects taking the MAB on microcomputer vs pencil and paper were compared using a one-way analysis of variance.

4. Correlation matrices were developed relating MAB subtest and IQ scores, for both the written and computer groups, to WAIS-R subtest and IQ scores.

5. The Fisher r to Z transformation was used to compare the correlations between MAB computer and WAIS-R, and the MAB written and WAIS-R for all subtests and Verbal IQ.

Chapter IV

Results

Description of Population

A total of 40 adults were tested in this study. All 40 of the subjects were administered the WAIS-R Verbal subtests with the exclusion of Digit Span. All 40 were administered the Verbal subtests of the MAB, 20 were administered the MAB by a microcomputer and 20 were administered the MAB in the usual pencil and paper method as described in the MAB Manual. The MAB computer group was comprised of 7 females and 13 males. The MAB written group was comprised of 9 females and 11 males. Subjects ranged in age from 17 to 50 as summarized in Table I. The mean age for the computer group was 31.05 and 31.85 for the written group. The mean grade equivalent for reading level for the computer group was 10.00 and 9.05 for the written group. The mean Verbal IQ for both the written and computer groups was six to eight points below the mean for the general population. On the variables of age, sex, IQ, and reading level, the Mab computer and MAB written groups are very similar.

Computerization of the MAB

The MAB was computerized using a software package called the Microcomputer Diagnostic Testing Project (MDTP). The MAB is of multiple choice design and all questions are objectively scored. This is the type of test that can be administered on an Apple II microcomputer using the MDTP. Each of the MAB subtests were entered as separate tests on the MDTP, and this allowed for each subtest to be administered individually. Practice problems, in which the correct answer was indicated, were also entered into the computer. The MAB's design lends itself to computerization with the MDTP, and this was easily accomplished.

Analysis of Variance

A one-way analysis of variance was used to test the hypothesis that the means for each subtest and Verbal IQ for the MAB computer group was equal to the means for each corresponding subtest and the Verbal IQ for the MAB written group. Six variable were tested and the results are summarized in Table II.

Small, non-significant differences were observed on all of the variables tested: Information, Comprehension, Arithmetic, Vocabulary, and Verbal IQ. The hypothesis of no significant difference between means for the MAB

computer and MAB written groups was supported.

Correlation Matrix Results

A correlation matrix was developed relating MAB computer subtest and IQ scores to WAIS-R subtest and IQ scores. A correlation matrix was also developed relating MAB written subtest and IQ scores to WAIS-R subtest and IQ scores. Table III displays the matrices.

In the MAB written and WAIS-R correlation matrix, the Vocabulary subtests correlated at .81, and the Verbal IQ scores correlated at .83. In the MAB computer and WAIS-R correlation matrix, the correlation for the Vocabulary subtests was .85 while the correlation for the Verbal IQs was .86. The correlations in the MAB computer and WAIS-R matrix were slightly higher than the corresponding correlations were in the MAB written and WAIS-R matrix.

Fisher r to Z Transformations

Fisher r to Z transformations were used to compare the corresponding correlations for the MAB computer and WAIS-R, and the MAB written and WAIS-R, for each subtest and the Verbal IQ. The results are summarized in Table IV.

No significant differences were found between the corresponding correlations for the MAB computer and

WAIS-R, and the MAB written and WAIS-R.

T a b l e I

Age Distribution in Years

Age in Years	Computer Group	Written Group
17 - 20	2	1
21 - 25	5	5
26 - 30	3	4
31 - 35	4	5
36 - 40	3	1
41 - 45	2	2
46 - 50	1	2
Total	20	20
Mean	31.05	31.85

Table II

Means, Standard Deviations, and Level of Significance
MAB Computer and MAB Written Groups

	MAB Written		MAB Computer		An of Var
Subtest	Mean	St. Dev.	Mean	St. Dev.	Lev of Sig.
Infor.	41.65	8.41	43.70	7.85	.43
Comp.	44.45	8.11	48.20	5.68	.10
Arith.	45.70	8.92	46.75	9.53	.72
Sim.	49.15	7.53	50.05	7.12	.70
Voc.	42.90	10.69	43.25	7.55	.91
Verbal IQ	92.10	11.21	94.65	11.02	.47

Table III

Correlation Matrix relating MAB Written and WAIS-R Groups

		Info	Comp	Arith	Sim	Voc	VIQ
	Info	.57	.60	.68	.66	.54	.69
	Comp	.64	.67	.57	.70	.66	.76
WAIS-R	Arith	.47	.45	.68	.62	.42	.62
	Sim	.49	.61	.20	.55	.51	.50
	Voc	.80	.76	.51	.81	.81	.83
	VIQ	.69	.72	.66	.79	.70	.83

Correlation Matrix relating MAB Computer and WAIS-R Groups

		Info	Comp	Arith	Sim	Voc	VIQ
	Info	.77	.56	.64	.68	.77	.74
	Comp	.59	.59	.59	.69	.50	.58
WAIS-R	Arith	.81	.69	.77	.76	.72	.86
	Sim	.64	.54	.57	.68	.51	.64
	Voc	.75	.72	.80	.65	.85	.80
	VIQ	.81	.67	.78	.78	.77	.86

Table IV

Fisher r to Z Transformations

Difference in correlations between
MAB Computer and MAB Written Groups

	Written group		Computer group		
Variable	r	Zr	r	Zr	diff. Z(1 - 2)
Information	.573	.652	.767	1.013	-1.052
Comprehension	.666	.804	.595	.685	0.347
Arithmetic	.685	.838	.767	1.013	-0.510
Similarities	.546	.612	.682	.833	.644
Vocabulary	.812	1.133	.853	1.267	-0.391
Verbal IQ	.833	1.198	.858	1.285	-0.254

Chapter V

Summary and Conclusions

Computerization of the MAB

The Multidimensional Aptitude Battery (MAB) was successfully entered onto a computer using the Microcomputer Diagnostic Testing Project (MDTP). This allowed for administration of this test by an Apple microcomputer. The MDTP was easily understood, and the researcher had little difficulty in using the program. Clerical/support staff should be able to enter tests onto microcomputers using the MDTP.

All subjects who were administered the MAB by computer said that they enjoyed this method of administration. The majority felt they would do at least as well on the tests administered by computers as compared to tests administered in the pencil and paper fashion. Some felt they would do better if the test was administered by a computer because they could answer questions at a faster rate. No subject felt that he/she would do better on a pencil and paper administered test.

Some of the subjects had no previous exposure to computers. These individuals did not appear to be at a

disadvantage. All subjects understood the instructions, and no major problems were encountered.

The apparent ease with which the MDTP was used to administer the MAB indicates that multiple choice type of exams can be successfully administered on a microcomputer. Many of the advantages to computer assisted testing that were cited in Chapter II became apparent in this study.

Analysis of Variance

The hypothesis that the means of the Verbal subtests and Verbal IQ for the MAB computer and MAB written groups are equal was supported by this study. Six variables were assessed using a one-way analysis of variance. Small, non-significant differences were observed. However, scores obtained through computer administration of the MAB were not significantly different from scores obtained through pencil and paper administration of the MAB.

Correlations with WAIS-R

Correlations for the MAB computer group to the WAIS-R were slightly higher than correlations for the MAB written group to the WAIS-R for 5 of the 6 variables tested. In the MAB written and WAIS-R correlations, the Vocabulary subtests correlated at .81, and the Verbal IQ scores correlated at .83. In the MAB computer and WAIS-R

correlations, the Vocabulary subtests correlated at .85 while the Verbal IQ's correlated at .86. Correlations for the other MAB subtests were not very predictive.

Fisher r to Z transformations were used to compare the corresponding correlations between the MAB written and WAIS-R, and MAB computer and WAIS-R. No significant differences were found. The method by which the MAB is administered does not affect the correlations with the WAIS-R.

Correlations for the MAB to WAIS-R for the Vocabulary subtest and Verbal IQ ranged from .81 to .86. Correlations for the MAB to WAIS-R for the other subtests (Information, Comprehension, Arithmetic, Similarities) ranged from .55 to .77. These correlations are much lower that the test-retest reliabilities of the verbal subtests and IQ which are reported in the WAIS-R Manual. These correlations ranged from .84 to .96. Results of this study indicate that scores on four of the five Verbal subtests of the MAB are not very predictive of the scores on the corresponding subtest of the WAIS-R. Jackson's claim that the MAB's subtests can be interpreted individually like those of the WAIS-R or that the MAB reveals scoring patterns which equal those of the WAIS-R is not supported by this study.

Implications

The major purpose of this study was to see whether the MAB could be administered by computer, and whether computerization affects performance on the MAB. The MAB was entered on computer and administration by computer was accomplished. The results indicated that computerization of the MAB does not significantly affect the results.

In terms of further research, the following are apparent:

1. A larger sample drawn randomly from the general adult populace should be studied to see whether results from this study are generalizable.
2. The results from other tests administered by computer should be compared with results from pencil and paper administration to see whether renorming is warranted.
3. Further studies comparing the MAB to the WAIS-R should be conducted to assess whether the results from this study are generalizable.

Conclusions

1. The MAB was successfully entered onto a microcomputer using the Microcomputer Diagnostic Testing Project, thus allowing for administration of this test by microcomputer.
2. Scores obtained through computer administration of the MAB did not differ significantly from those obtained from

pencil and paper administration of the same test.

3. In both MAB groups (written and computer), correlations with the corresponding score on the WAIS-R were greater than .80 for the Verbal IQ and Vocabulary subtest. Correlations with the WAIS-R for the other MAB subtests were substantially lower.

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Appendix I

Consent form

WAIS-R/MULTIDIMENSIONAL BATTERY STUDY

The proposed study is designed to compare the results of the Wechsler Adult Intelligence Scale-Revised (WAIS-R) and the Multidimensional Aptitude Battery (MAB). The MAB can be administered to groups whereas the WAIS-R must be individually administered.

I agree to participate in the WAIS-R/MAB study. The test results will be used by Braden Hirsch who is fulfilling the research requirement in his program of studies at the University of Alberta. I understand that my test results will be kept confidential and used for research purposes only.

Further information about the study can be obtained from Braden Hirsch at 427-9531.

Signed:_____

Witness:_____

Date:_____